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ORIGINAL ARTICLE

FREQUENCY AND CAUSES OF PERINATAL MORTALITY IN A TERTIARY CARE HOSPITAL IN PESHAWAR, PAKISTAN

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ABSTRACT

Background: Perinatal mortality rate indicates quality of care provided during pregnancy and delivery to the mother and to the neonate in its early neonatal period. The objective of this study were to determine the frequency and causes of perinatal mortality in a tertiary care hospital in Peshawar, Pakistan.

Materials & Methods: This cross-sectional study was conducted at Department of Gynaecology & Obstetrics, Khyber Teaching Hospital, Peshawar, Pakistan from 1st January 2016 to 31st December 2016. The inclusion criteria was all singleton gestations with gestational age of at least 24 weeks presenting with perinatal mortality. Data was collected for the following variables; age groups (up to 20 years, 21-30 years, 31-40 years and > 40 years), booking status (yes/ no), period of gestation (24-31+6, 32-36+6, 37-39+6 and > 40 weeks), foetal maturity (preterm < 37 weeks, term 37-42 & post term > 42 weeks), foetal weight (<1.5 kg, 1.5-2.49 kg, 2.5-3.5 kg and > 3.5 kg) and cause of perinatal mortality._

Results: Out of 4508 deliveries, there were 288 perinatal deaths, including 228 stillbirths and 60 neonatal deaths, so perinatal mortality rate was 63.8/1000 births. 90.28% women were unbooked. Most common cause was hypertensive disorders of pregnancy (27.78%) followed by antepartum haemorrhage (25.71%) and then mechanical causes (13.88%). Congenital anomalies comprised 11.8% cases, neonatal problems 10.07% and maternal medical disorders for 4.16% cases. Cause of 4.16% cases remained unexplained.

Conclusion: Appropriate strategies like control of identifiable causes, proper antenatal and postnatal care, healthy delivery practices and availability of emergency neonatal care facilities can bring down perinatal mortality rates.

KEY WORDS: Perinatal mortality; Stillbirth; Neonatal death; Perinatal deaths; Eclampsia; HELLP Syndrome; Placental abruption; Placenta previa; Uterine rupture; Hydrocephalus.

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INTRODUCTION

The term perinatal mortality (PNM) comprises of stillbirths and early neonatal deaths.[1] One of the top most global health initiatives is to improve maternal health and reducing perinatal mortality.[2] Perinatal mortality audit helps to assess the status of quality of health services and determine the causes of perinatal deaths in a setting. Perinatal deaths are one hundred times more common than maternal deaths.[3]

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According to WHO, the number of perinatal deaths worldwide is exceeding 7.6 million, with 98% of these deaths taking place in developing countries.[4]

To review where the greatest burden of preventable mortality lies, it can be helpful to reframe our view of mortality in a way that captures deaths late in pregnancy, during labor and in first hour and days of birth, and considering that in our country, 62% of all neonatal deaths are in early neonatal period.

Complications occurring during pregnancy and labor are important determinants of neonatal survival and health. 65% of deliveries in our country are home deliveries and 8% of these home deliveries are supervised by trained birth attendants.[5] Vast majority of home births where complications occur are referred to tertiary care hospitals. Data regarding stillbirths occurring at homes is poorly reported.[6]

Our investigation will serve as a source of information and guidance to public health policy makers to plan

appropriate management strategies for the problem. The objective of this study were to determine the frequency and causes of perinatal mortality in a tertiary care hospital in Peshawar, Pakistan.

MATERIALS AND METHODS

This was a cross-sectional study conducted at Unit B of Department of Gynaecology & Obstetrics, Khyber Teaching Hospital, Peshawar, Pakistan from 1st January 2016 to 31st December 2016. Khyber Teaching Hospital is the teaching hospital attached to Khyber Medical College, Peshawar with 1000 beds in total and 96 bedded three Gynaecology & Obstetric units, each with 32 beds. Our combined labor room can accommodate 22 deliveries at different stages of labor at a time.

The study was approved by Research & Ethics Review Board of the hospital. The consent of the participating mothers was sought before inclusion. The inclusion criteria was all singleton gestations with gestational age of at least 24 weeks presenting with perinatal mortality. Exclusion criteria was none. The sample included 4508 laboring mothers, including 288 perinatal deaths, selected through consecutive non probability sampling technique from our Unit B only.

All these cases were admitted to labor room. General and obstetric history was recorded. General, obstetric and systemic examination were done. Routine investigations were conducted. Labors were monitored and the babies delivered as per obstetric protocols on case to case basis.

Data was collected for the following variables; age groups (up to 20 years, 21-30 years, 31-40 years and > 40 years), booking status (yes/ no), period of gestation (24-31+6, 32-36+6, 37-39+6 and > 40 weeks), foetal maturity (preterm < 37 weeks, term 37-42 & post term > 42 weeks), foetal weight (<1.5 kg, 1.5-2.49 kg, 2.5-3.5 kg and > 3.5 kg) and cause of perinatal mortality. Cases with a minimum of three visits in the index pregnancy were declared as booked. We applied Aberdeen classification of perinatal deaths in our study. All these variable were on categorical scale, so analyzed descriptively by count and percentage.

RESULTS

Out of 288 eligible mothers, 51 (17.7%) were in age group of < 20 years, 169 (58.61%) in 21-30 years, 46 (15.9%) in 31-40 years and 22 (7.6%) in > 40 years age groups. The booked cases were 28 (9.72%) while unbooked cases were 260 (90.28%). Out of 288 mothers, 147 (51%) were in gestational age group of 24-31+6, 78 (27%) in 32-36+6, 51 (17.7%) in 37-39+6 and 06 (2.8%) in gestational age group of > 40 weeks.

The findings for foetal maturity were; preterm 223 (7.43%), term 58 (20.14%) & post term seven (2.43%) babies. Foetal weight was <1.5kg in 49 (17%) cases, 1.5-2.49 kg in 161 (56%), 2.5-3.5 kg in 69 (24%) and >3.5kg in nine (3%) cases.

During the one year period, 4508 deliveries took place, out of which frequency of perinatal mortality was 288, including 228 stillbirths and 60 early neonatal deaths, making perinatal mortality rate (PMR) of 63.8/1000 births.

The causes of perinatal mortality (PNM) are given in Table 1. Main causes of PNM were hypertensive disorders of pregnancy in 80 (27.78%) cases, followed by 74 (25.71%) cases of antepartum haemorrhage and mechanical factors contributing for 40 (13.88%) cases. Congenital anomalies were responsible for 34 (11.8%) cases and neonatal problems for 29 (10.07%) cases. Maternal medical disorders contributed for 12 (4.16%) cases whereas postterm pregnancies contributed for seven (2.43%) cases of PNM. Cause of 12 (4.16%) cases remained unexplained.

DISCUSSION

Perinatal mortality (PNM) rate is a sensitive indicator of health status of a community. Its etiology is multi factorial and its rate is reduced by improvement in the quality of health care.[7] If the results are generalized and a comparison is made, it is seen clearly that perinatal mortality rate of our hospital is almost equal to perinatal mortality rates of other underdeveloped countries.[8-10] Inaccessibility of health services, poverty, malnutrition, illiteracy and cultural taboos are responsible for vast majority of cases of perinatal mortality.[11,12]

In our study, 90.28% cases of perinatal mortality were unbooked. Iqbal M, et al from our department had similar figure of 88.39% cases of perinatal mortality in 2014 who had not received antenatal care.[13]

Regarding maternal age, 58.61% of our cases belonged to age range of 21-30 years. Same age range was observed in a study done in Peshawar in 2014 where 60.5% belonged to this age group.[13]

In our study, the perinatal mortality rate was 63.8/1000. Iqbal M, et al conducted a study at Gynaecology Unit A of this department of our hospital in 2014 and concluded that perinatal mortality rate was 65.7/1000 in 11260 births, almost similar to our finding.[13]

Hypertensive disorders of pregnancy with eclampsia was the most common cause of PNM comprising 27.78% cases with 14.93% due to eclampsia. Iqbal M, et al observed similar findings of hypertension as a cause of PNM in 26.7% cases with 15.9% due to eclampsia.[13] According to same study, pre eclampsia was responsible for 10.8% cases of PNM, as similar to our finding of 9.03%. Korejo R, et al in their study found lower rate of 24% cases of PNM due to hypertensive disorders of pregnancy.[14]

Antepartum haemorrhage was responsible for PNM

Table 1: Causes of perinatal mortality as per Aberdeen classification (n=288).

S.No.	Cause	Count	Percentage	Total Count (%)
A	**Hypertensive disorders**			**80 (27.78 %)**
1	Eclampsia	43	14.93%	
2	Severe pre eclampsia	26	9.03%	
3	HELLP syndrome	11	3.82%	
B	**Antepartum Haemorrhage**			**74 (25.71 %)**
4	Placental abruption	42	14.58%	
5	Placenta previa	26	9.03%	
6	Unclassified APH	06	2.08%	
C	**Mechanical Factors**			**40 (13.89 %)**
7	Obstructed labor	15	5.20%	
8	Uterine rupture	05	1.74%	
9	Breech presentation	10	3.47%	
10	Transverse lie	04	1.39%	
11	Nuchal cord	03	1.04%	
12	Cord prolapse	02	0.70%	
13	Cord presentation	01	0.35%	
D	**Congenital Anomalies**			**34 (11.80 %)**
14	Hydrocephalus	17	5.90%	
15	Anencephaly	11	3.82%	
16	Neural tube defects	03	1.04%	
17	Sacrococcygeal teratoma	02	0.70%	
18	Osteogenesis imperfect	01	0.35%	
E	**Neonatal Problems**			**29 (10.06 %)**
19	Meconium aspiration syndrome	17	5.90%	
20	Respiratory distress syndrome	08	2.77%	
21	Septicemia	04	1.39%	
F	**Maternal Medical Disorders**			**12 (4.17 %)**
22	Diabetes	09	3.12%	
23	Hepatitis	02	0.70%	
24	Chorioamnionitis	01	0.35%	
G/ 25	**Postterm**	**07**	**2.44%**	**07 (2.44 %)**
H/ 26	**Unexplained deaths**	**12**	**4.17%**	**12 (4.17 %)**
Total		**288**	**100.0 %**	**288 (100.0 %)**

in 25.69% in our study, being higher than 20% cases of PNM in a study done at Karachi[14], and lower than 29.71% in another study.[12] Amongst the causes of antepartum haemorrhage, 14.38% cases in our study were due to placental abruption, similar to 14% to a study in Karachi[14] and lower than 18.9% cases in a study from Peshawar in 2014.[13]

Mechanical factors in form of obstructed labor, cord prolapse, mal presentations etc are the third frequent causes of PNM. Obstructed labor is responsible for 5.2% cases of PNM in our study, lower than 8.6 % in study done by Korejo R, et al[14] and 7.1% in a study done by Ghazi A, et al.[15] Rupture uterus leading to foetal death is responsible for 1.74% cases of PNM in our study, and 2.7 % and 2.1 % cases in two other studies.[14,15] Transverse lie leading to PNM was 1.3% in a study[13] and 1.39 % in our study.

Congenital anomalies are a common cause of PNM in developed countries making more than 20% of PNM.[16] Globally 10% neonatal deaths occur due to congenital anomalies.[17] Same rates were observed in two studies.[13,18] We observed 11.8% cases of PNM due to congenital anomalies.

Neonatal problems contributed for 10.07% cases of PNM in our study, as opposed to 8.64% in another study.[13] Meconium aspiration caused PNM in 5.6% in same study[13] and 5.9% in our one. Respiratory distress syndrome caused 2.77% PNM in our study and 2% in a study done at Karachi.[15]

Maternal diseases comprised 4.15% cases of PNM, out of which diabetes caused 3.12%, hepatitis caused 0.69% and chorioamnionitis caused 0.35% PNM in our study, in comparison to another study where diabetes lead to 2.02%, hepatitis caused 0.94% and chorioamnionitis resulted in 0.54% cases of PNM.[13]

The need for rushing the patient to hospital at last minute has lead to increase in PNM rates which needs to be decreased by equipping the private maternity centers with well-trained obstetricians and neonatologists and all facilities for emergency neonatal care. Preconception supplementation with folic acid and calcium during pregnancy can reduce serious risks of neural tube defects and pre eclampsia. Timely recognition of medial disorders can reduce many complications like preterm delivery and intrauterine growth restriction, which are etiological factors for increase PNM in vast majority of cases.

Limitations of our study was diversity in population regarding ethnicity, educational and financial status.

CONCLUSION

Appropriate strategies like control of identifiable causes of perinatal mortality, proper antenatal care, safe delivery practices and obstetric and neonatal care services can bring down PNM rates, which has largely remained static over the last 40 years, due to poor educational and financial status, illiteracy, cultural taboos, and lack of standard care during antepartum, intrapartum and postpartum period.

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CONFLICT OF INTEREST
Authors declare no conflict of interest.
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AUTHORS' CONTRIBUTION

The following authors have made substantial contributions to the manuscript as under:

Conception or Design:	MQ, SJ
Acquisition, Analysis or Interpretation of Data:	MQ, SJ, SA, MM
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All the authors agree to be accountable for all aspects of the work in ensuring that questions related to the accuracy or integrity of any part of the work are appropriately investigated and resolved.